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WONG, EDNA				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



### Office Action Summary

**Application No.**

10/077,777

**Applicant(s)**

MATSUDA ET AL.

**Examiner**

EDNA WONG

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 October 2008 and 28 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5,8,10-16 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,8,10-16 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_



***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on October 28, 2008 and January 28, 2009 have been entered.

This is in response to the Amendment dated October 28, 2008 and Supplemental Amendment dated January 28, 2009. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Response to Arguments***

Claim Objections

Claims **1 and 3** have been objected to because of minor informalities.

The rejection of claims 1 and 3 has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

Claims **1-2, 8 and 17** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the



subject matter which applicant regards as the invention.

The rejection of claims 1-2, 8 and 17 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

Claims **1-5 and 8-17** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **EP 1,074,640 A1** ('640) in combination with **Matsuda** (US Patent No. 5,645,706).

With regards to claims **9 and 17**, the rejection under 35 U.S.C. 103(a) as being unpatentable over EP 1,074,640 A1 ('640) in combination with Matsuda has been withdrawn in view of Applicants' amendment. Claims 9 and 17 have been cancelled.

With regard to claims **1-5, 8, 10-16 and 19**, the rejection under 35 U.S.C. 103(a) as being unpatentable over EP 1,074,640 A1 ('640) in combination with Matsuda is as applied in the Office Actions dated September 28, 2007 and April 9, 2008 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that Matsuda conducts an electrolytic treatment using a conventional non-electrolytic treatment bath.

Applicants state that dissolution of Fe is inevitable as long as a steel material or an Fe electrode is used. However, the amount of the dissolved Fe ions can be suppressed by controlling the voltage and current applied so that Fe ions in the treatment bath exists under the concentration in which  $\text{Fe}^{3+}$  ions dissolve (the ORP is



770mV or greater). Regarding Matsuda, the Office Action alleges that “since  $\text{Fe}^{3+}$  is stably present in the bath with an ORP of 560mV or greater...” (Office Action, col. 13, lines 39-58). However, Matsuda relates to a conventional non-electrolytic treatment bath in which sludge is unavoidably formed.

In response, EP '640 is the primary reference. Matsuda is the secondary reference. EP '640 is used to teach the phosphate chemical treatment bath (see Office Action date September 28, 2007, pages 11- 12, bridging paragraph). Matsuda is used to modify EP '640 for only the limitations recited in present claims 3 and 4 (see Office Action date September 28, 2007, pages 17-18, bridging paragraph).

The Examiner is *not* modifying the entire bath disclosed by EP '640, but is only modifying the amount of Fe ions dissolved in the phosphate chemical treatment bath disclosed by EP '640.

One having ordinary skill in the art would have taken the knowledge about Fe ions from Matsuda and applied it in EP '640 because the Fe ions disclosed in Matsuda is the same as the Fe ions disclosed in EP '640 and an element and all of its properties are inseparable (MPEP § 2141.02(V)).

EP '640 teaches that:

In the case of using metal materials that dissolve and precipitate easily and become film components (such as Fe, Zn or Cu) of Table 3 for the anode, those metals dissolve easily in the phosphate chemical treatment bath even if voltage is not applied. If this phenomenon (action) is left undisturbed, these metal ions dissolve in the treatment bath even when treatment is not performed. ***As a result, the state of the treatment bath ends up changing to a state that that does not allow treatment to be performed.*** Consequently, there is a need to provide a means for inhibiting that dissolution. It is preferably to take the following measures as specific examples of



measures to be taken as means for inhibiting dissolution:

- (1) controlling the surface area of the metal electrode (anode) during electrolysis,
- (2) controlling the electrolysis current of the metal electrode (anode) during electrolytic treatment,
- (3) performing weak electrolysis (dormant electrolysis) to a degree that the metal used for the cathode does not dissolve (to a degree that the solution components do not decompose) while using an insoluble electrode for the anode and a metal electrode that dissolves easily (Fe, Zn, Cu) for the cathode, when electrolysis is dormant, with this electrolysis to be referred to as "dormant electrolysis" (page 13, [0129]).

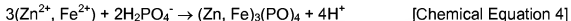
The ORP (oxidation-reduction potential) of the treatment bath **reflects** the composition of the treatment bath (page 22, [0219]).

Matsuda teaches that:

The iron is dissolved and oxidized by Chemical Equations 3 and 10:



causes the treatment bath to contain both  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$ , and so the ORP may be 560 mV or greater. In addition, the reaction of the formation of the film (Chemical Equation 4):



is also **promoted, and thus the formation of the chemical film takes place**. Since  $\text{Fe}^{3+}$  is stably present in the bath with an ORP of 560 mV or greater, the chemical treatment coating which is formed is assumed to be a phosphate chemical coating including iron in the form of both  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  (col. 13, lines 19-58).

Thus, if the ORP reflects the composition of the treatment bath, then the amount of Fe ions dissolved into the phosphate chemical treatment bath would have regulated and monitored the ORP of the treatment bath.

If the iron is dissolved and oxidized by Chemical Equations 3 and 10, and  $\text{Fe}^{3+}$  is stably present in the bath with an ORP of 560 mV or greater, then one having ordinary skill the art would have controlled the amount of Fe ions dissolved in the phosphate chemical treatment bath to regulate and maintained that ORP phosphate chemical



treatment bath to a value in the range of 770 mV to 960 mV to promote film formation and have  $\text{Fe}^{3+}$  stably present in the bath.

Applicants state that although EP '640 refers to "unavoidably formed reaction products (sludge) and nitrides (such as  $\text{NO}_2$ ) by reduction of nitrate ion other than..., can be removed from the treatment bath," it fails to disclose the constituent feature of the presently claimed invention that makes it possible to conduct an electrolytic treatment of an electroconductive material continuously for a long time period.

In response, what is the constituent feature of the presently claimed invention that makes it possible to conduct an electrolytic treatment of an electroconductive material continuously for a long time period?

Applicants state that EP '640 fails to control the amount of substance harmful to the reaction, generated in the electrolytic phosphate chemical treatment reaction. In the presently claimed invention, the substance harmful to the reaction, such as (a) excess Fe ions, (b)  $\text{N}_2\text{O}_4$  generated from the reduction of nitrate ions, is removed from the treatment bath so as to obtain a stable treatment bath.

In response, there is no claim basis for removing an amount of -- harmful substance -- or an excess amount of Fe ions in the claims as presently written.

As to removing the amount of  $\text{N}_2\text{O}_4$  generated from the reduction of nitrate ions, the  $\text{N}_2\text{O}_4$  gas is presently claimed in the alternative, i.e., "separating  $\text{NO}_2$  and/or  $\text{N}_2\text{O}_4$



gas formed in the treatment" (claim 1, lines 28 and 33-34). If  $N_2O_4$  is not formed, then it there is no need for it to be removed, or disclosed by the prior art.

Applicants state that the reaction according to (13) occurs when the ORP of the treatment bath is 800 mV or less. Thus,  $N_2O_4$  does not generate when the ORP of the treatment bath is greater than 800 mV.

In response, claim 1, lines 35-38, recite that "the oxidation-reduction potential (ORP) of said phosphate chemical treatment bath, indicated as the potential relative to the hydrogen standard electrode potential, is maintained at 770 mV to 960 mV, and is used to monitor the phosphate chemical treatment bath".

Thus, from 801 mV to 960 mV,  $N_2O_4$  is not generated. If  $N_2O_4$  is not generated, then it there is no need for it to be removed, or disclosed by the prior art.

EP '640 teaches that the ORP of the treatment bath is preferably between -0.83 V and 1.23 V in principle (page 22, [0219]). The method disclosed by EP '640 would not have generated  $N_2O_4$  when the ORP is 0.80 V to 1.23 V.

Applicants state that EP '640 relates to a method using an electrolytic bath and hence the preferable pH range is 0.5-5 (paragraph [0218]). The ORP is based on Table 4 showing the reaction formulas that are involved in electrolytic phosphate chemical treatment (paragraph [0219]). In the presently claimed invention, the ORP and pH values are further restricted. The ORP of 770 to 960mV depends on the reaction



formulas (3) and (12). The pH of 2.5 or lower is effective against the  $N_2O_4$  generation.

In response, EP '640 teaches that the preferable pH range is 0.5-5 and the ORP of the treatment bath is preferably between -0.83 V and 1.23 V in principle (page 22, [0219]). In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists (MPEP § 2144.05(I)).

### ***Response to Amendment***

#### ***Election/Restrictions***

Applicant's election with traverse of the specie of cathodic electrolysis in the reply filed on March 27, 2009 is acknowledged. The traversal is on no ground(s).

Applicant's election of the specie of cathodic electrolysis in the reply filed on March 27, 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The requirement is still deemed proper and is therefore made FINAL.

Accordingly, the specie of anodic electrolysis is withdrawn from consideration as being directed to a non-elected invention.

Furthermore, the specie of anodic electrolysis has been deleted from the claims.

#### ***Claim Objections***

Claim 19 is objected to because of the following informalities:



Claim 19

line 6, it is suggested that the word -- ions -- be inserted after "Fe<sup>3+</sup>" (second occurrence).

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

I. Claims 1-5, 8, 10-16 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

A. Claim 1

lines 23-24, recite "a Fe ion source, the Fe ion source being at least one of an electrode"

Applicants' specification, pages 1-44, does not disclose a Fe ion source, the Fe ion source being at least one of an electrode. Thus, there is insufficient written description to inform a skilled artisan that Applicants were in possession of the claimed invention as a whole at the time the application was filed.

The Examiner has carefully considered the entire specification as originally filed, however, there is found no literal support in the specification for the newly added



limitations in amended claim 1. Applicants have not provided the page number and line numbers from the specification as to where the newly added limitations are coming from. *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.* 738 F.2d 453 (Fed. Cir. 1984).

**B. Claim 1**

lines 31-34, recite "circulating the treatment bath between the two tanks, and providing a mechanism that opens treatment liquid to the atmosphere at a reduced pressure either between the two tanks or within the two tanks, as a means of separating NO<sub>2</sub> and/or N<sub>2</sub>O<sub>4</sub> gas formed in the treatment accompanying electrolytic treatment from the treatment bath".

**Claim 13**

lines 1-5, recite "further comprising removing, through a liquid circulation circuit, a portion of the treatment liquid at a location prior to being introduced into a filter material in a filter, exposing the removed treatment liquid to the atmosphere, and returning it to the electrolytic treatment tank after separating NO<sub>2</sub> and N<sub>2</sub>O<sub>4</sub> present in the treatment liquid.

There are two separate, independent circulating and atmosphere exposing steps recited in the present claims. The treatment bath is circulated between the two tanks



and changes into the treatment liquid. The treatment liquid is opened to the atmosphere and then a portion of the treatment liquid is removed by circulation and the removed treatment liquid is exposed to the atmosphere.

Applicants' specification, pages 1-44, does not disclose two separate, independent circulating and atmosphere exposing steps. Thus, there is insufficient written description to inform a skilled artisan that Applicants were in possession of the claimed invention as a whole at the time the application was filed.

The Examiner has carefully considered the entire specification as originally filed, however, there is found no literal support in the specification for the limitations in claims 1 and 13. Applicants have not provided the page number and line numbers from the specification as to where the newly added limitations are coming from. *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.* 738 F.2d 453 (Fed. Cir. 1984).

II. Claims 1-5, 8, 10-16 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

lines 10-11, "the metal ions dissolved in said phosphate chemical treatment bath" lack antecedent basis.



line 24, the claim limitation of "(when said electrode comprises Fe)" is indefinite.

The claim limitation in the parentheses raises a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims.

line 25, the claim limitation of "(when the metal article to be treated comprises a steel material)" is indefinite.

The claim limitation in the parentheses raises a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims.

lines 28-29, "the electrolytic treatment bath" lacks antecedent basis.

line 29, the "the treatment bath" is indefinite.

There are two treatment baths previously recited in the method: the phosphate chemical treatment bath recited in claim 1, lines 5-6; and the electrolytic treatment bath recited in claim 1, lines 28-29.

It is unclear from the claim language which treatment bath this claim limitation is further limiting. See also claim 1, lines 31 and 34; claim 14, line 2; and claim 15, lines 2-3.

Subsequent mention of an element is to be modified with claim language making



the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (citing P. Rosenberg, 2 *Patent Law Fundamentals'* § 14.06 (2d. Ed. 1984)).

line 30, it appears that the "electrolytic treatment" is not the same as the electrolytic treatment recited in claim 1, line 5. However, it is unclear from the claim language as to whether this is the case.

line 31, it appears that the "electrolytic treatment" is the same as the electrolytic treatment recited in claim 1, line 30. However, the claim language is unclear as to whether it is. See also claim 10, lines 2-3; and claims 12, line 3.

Subsequent mention of an element is to be modified by the definite article "the", "said" or "the said," thereby making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (citing P. Rosenberg, 2 *Patent Law Fundamentals'* § 14.06 (2d. Ed. 1984)).

If it is not the same, then what is the relationship between the electrolytic treatments? The claim is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.



line 32, it appears that the "treatment liquid" is the same as the treatment bath recited in claim 1, line 31. However, the claim language is unclear as to whether it is. See also claim 10, line 3; claim 12, lines 2-3; and claim 13, lines 3-5.

Subsequent mention of an element is be modified with consistent claim language thereby making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (citing P. Rosenberg, 2 *Patent Law Fundamentals* § 14.06 (2d. Ed. 1984)).

If it is not the same, then what is the relationship between the treatment liquid and the treatment bath? The claim is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.

lines 33-34, it appears that the "NO<sub>2</sub> and/or N<sub>2</sub>O<sub>4</sub> gas formed" is the same as the NO<sub>2</sub> and/or N<sub>2</sub>O<sub>4</sub> gasses generated recited claim 1, line 28. However, the claim language is unclear as to whether it is.

Subsequent mention of an element is be modified with consistent claim language thereby making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (citing P. Rosenberg, 2 *Patent Law Fundamentals* § 14.06 (2d. Ed. 1984)).



If it is not the same, then what is the relationship between the NO<sub>2</sub> and/or N<sub>2</sub>O<sub>4</sub> gas formed and the NO<sub>2</sub> and/or N<sub>2</sub>O<sub>4</sub> gasses generated? The claim is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.

line 34, "the treatment" is indefinite.

There are two treatments recited in the method: the electrolytic treatment recited in claim 1, line 5; and the electrolytic treatment recited in claim 1, line 30.

It is unclear from the claim language which treatment bath this claim limitation is further limiting.

Subsequent mention of an element is to be modified with consistent claim language thereby making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (*citing* P. Rosenberg, 2 *Patent Law Fundamentals* § 14.06 (2d. Ed. 1984)).

line 34, it appears that the "electrolytic treatment" is the same as the electrolytic treatment recited in claim 1, line 30. However, the claim language is unclear as to whether it is.

Subsequent mention of an element is to be modified by the definite article "the", "said" or "the said," thereby making the latter mention(s) of the element unequivocally



referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (*citing* P. Rosenberg, 2 *Patent Law Fundamentals*' § 14.06 (2d. Ed. 1984)).

If it is not the same, then what is the relationship between the electrolytic treatments? The claim is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.

#### Claim 2

line 2, "said electrolytic treatment" is indefinite.

There are two electrolytic treatments previously recited in the method: the electrolytic treatment recited in claim 1, line 5; and the electrolytic treatment recited in claim 1, line 30.

It is unclear from the claim language which electrolytic treatment this claim limitation is further limiting. See also claim 2, line 9.

Subsequent mention of an element is to be modified with claim language making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (*citing* P. Rosenberg, 2 *Patent Law Fundamentals*' § 14.06 (2d. Ed. 1984)).

If it is not the same, then what is the relationship between the electrolytic



treatments? The claim is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.

lines 3-4, it appears that "a phosphoric acid" is the same as the phosphoric acid recited in claim 1, line 8. However, the claim language is unclear as to whether it is.

Subsequent mention of an element is to be modified by the definite article "the", "said" or "the said," thereby making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (citing P. Rosenberg, 2 *Patent Law Fundamentals*' § 14.06 (2d. Ed. 1984)).

If it is not the same, then what is the relationship between the phosphoric acids? The claim is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.

lines 4-5, "the metal material article for which the dissolution-precipitation equilibrium potential at which the metal ions dissolved in the phosphate chemical treatment bath are reduced and precipitate as the metal is greater than or equal to -830 mV, which is the cathodic reaction decomposition potential of water when indicated as the hydrogen standard electrode potential" lack antecedent basis.



Claim 3

line 4, it appears that "a solubility limit" is the same as the solubility limit recited in claim 1, line 26-27. However, the claim language is unclear as to whether it is.

Subsequent mention of an element is to be modified by the definite article "the", "said" or "the said," thereby making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (citing P. Rosenberg, 2 *Patent Law Fundamentals*' § 14.06 (2d. Ed. 1984)).

If it is not the same, then what is the relationship between the solubility limits? The claim is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.

Claim 13

line 5, it appears that the "NO<sub>2</sub> and N<sub>2</sub>O<sub>4</sub>" is the same as the NO<sub>2</sub> and/or N<sub>2</sub>O<sub>4</sub> gasses generated recited in claim 1, line 28. However, the claim language is unclear as to whether it is.

Subsequent mention of an element is to be modified by the definite article "the", "said" or "the said," and is to be modified with consistent claim language, thereby making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D.



Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (citing P. Rosenberg, 2 *Patent Law Fundamentals* § 14.06 (2d. Ed. 1984)).

Furthermore, if the "NO<sub>2</sub> and N<sub>2</sub>O<sub>4</sub>" is present in the treatment liquid, and the treatment liquid is the same as the treatment bath; and the treatment bath is the same as the electrolytic treatment bath; and the electrolytic treatment bath is the same as the phosphate chemical treatment bath, then, the NO<sub>2</sub> and/or N<sub>2</sub>O<sub>4</sub> gasses in the method are from one source and has to be the same.

#### Claim 16

lines 1-3, is a duplicate of claim 14 if the phosphate chemical treatment bath is the same as the treatment bath.

#### Claim 19

line 3, it appears that "a Fe electrode" is the same as the Fe source being at least one of an electrode or when said electrode comprises Fe as recited in claim 1, lines 23-24. However, the claim language is unclear as to whether it is.

Subsequent mention of an element is to be modified by the definite article "the", "said" or "the said," and is to be modified with consistent claim language, thereby making the latter mention(s) of the element unequivocally referable to its earlier recitation. See *Slimfold Mfg. Co. v. Kincaid Properties, Inc.*, 626 F. Supp 493,495 (N.D. Ga. 1985), *aff'd*, 810 F.2d 1113 (Fed. Cir. 1987) (citing P. Rosenberg, 2 *Patent Law*



*Fundamentals'* § 14.06 (2d. Ed. 1984)).

If it is not the same, then what is the relationship between the Fe electrodes? The claim is incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections.

III. Claims 1-5, 8, 10-16 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: between the phosphate chemical treatment bath, the electrolytic treatment bath and the treatment liquid.

Claim 1

lines 5-6, recite "a phosphate chemical treatment bath".

lines 28-29, recites "the electrolytic treatment bath".

line 32, recites "treatment liquid".

Is the treatment liquid the same as the electrolytic treatment bath; and the electrolytic treatment bath the same as the phosphate chemical treatment bath?

There are three baths recited in the present claims. The claim language omits reciting a cooperative relationship between them.



IV. Claims 1-5, 8, 10-16 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: between the circulating and exposing steps.

Claim 1

lines 31-34, recite "circulating the treatment bath between the two tanks, and providing a mechanism that opens treatment liquid to the atmosphere at a reduced pressure either between the two tanks or within the two tanks, as a means of separating NO<sub>2</sub> and/or N<sub>2</sub>O<sub>4</sub> gas formed in the treatment accompanying electrolytic treatment from the treatment bath".

Claim 13

lines 1-5, recite "further comprising removing, through a liquid circulation circuit, a portion of the treatment liquid at a location prior to being introduced into a filter material in a filter, exposing the removed treatment liquid to the atmosphere, and returning it to the electrolytic treatment tank after separating NO<sub>2</sub> and N<sub>2</sub>O<sub>4</sub> present in the treatment liquid.

There are two separate, independent circulating and atmosphere exposing steps recited in the present claims. The treatment bath is circulated between the two tanks



and changes into the treatment liquid. The treatment liquid is opened to the atmosphere and then a portion of the treatment liquid is removed by circulation and the removed treatment liquid is exposed to the atmosphere.

When and how does the treatment bath change into the treatment liquid? The claim language omits reciting a cooperative relationship between them.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDNA WONG whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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